

5

## SYSTEM FOR STORING AND UNPACKING ENCASED ARTICLES

## CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application Serial No. 60/477,485  
10 filed June 9, 2003.

## BACKGROUND OF THE INVENTION

The invention relates to the packaging of encased articles such as those wrapped in a protective seal, and more specifically to an apparatus for storing and opening a unit blister-pack type package.

15 A blister-pack is a type of package wherein an item or article to be protected is sealed between a substantially planar substrate and a concave compartment structure resembling a "blister." The blister is typically made of a plastic type material. The substrate may be paper, foil, or plastic, or a laminate of one or more of these materials. The encased item or article is typically removed by pushing the article or item from the blister side of the pack through the planar  
20 substrate. In the case of a child-resistant package, both the substrate and blister are made difficult to penetrate.

The blister-pack is useful for packaging individual, or unit, doses of pharmaceutical products. And, when used for this purpose, the blister-pack is particularly suitable for the packaging and distribution of multiple unit doses in a single package. A well known typical  
25 multiple blister pack 20 arranged as an array of individual, or unit, dose blister packs is illustrated in Fig. 1. In the pack illustrated, each blister 22 contains a single (or individual, or unit) dose of a medication or similar item. Each unit dose is segregated by lines of demarcation 26. The intersecting lines of demarcation 26 define individual unit dose blister-packs 28. The line

5 of demarcation 26 may be a frangible line such as a perforated line that facilitates separation of a unit 28 from the multiple pack 20.

A problem with a blister-pack is that often it may be difficult to push the item or article, such as pill, through the substrate. This problem exists because often the substrate is made particularly durable to maintain the freshness and efficacy of the encased article. Sometimes the  
10 substrate is made to inhibit removal of the encased article or item, as in the use of a child-resistant package. Thus, a need exists for a means for facilitating removal of an encased item or article from a blister-pack or similar protective seal.

It is known to provide a separate package opener that employs a protruding blade to puncture a substrate. However, such blades are typically exposed and create a hazard for users.  
15 In addition, such blades are designed to substantially protrude into the package. This configuration creates the possibility of the blade puncturing or otherwise coming into contact with the enclosed item or article. This is especially undesirable in the case of items/articles such as capsules, gel caps or tablets that may be damaged if punctured. Further, it is generally undesirable for a non-sterile foreign object to come into contact with a consumable product.

20 Although prior attempts to solve the problem of removing an encased article from its protective seal are known, there remains the need for a convenient means to store encased articles together with a means for safely and efficiently cutting the unique protective seal that encases the article.

## 25 BRIEF SUMMARY OF THE INVENTION

The present invention provides a system for storing and opening encased articles. By way of example and not limitation, an encased article includes an item that is sealed by any

5 flexible or semi-flexible protective covering, shrink-wrapped, or blister-wrapped. For the purpose of efficiently teaching the present invention, and not as a limitation, the example of a blister-pack will be illustrated and described.

According to one embodiment of the invention, a channel for receiving a flanged edge of a unit dose blister-pack has a cutting edge disposed with respect to the channel so as to engage  
10 the flanged edge that is translated along the channel.

In accordance with another embodiment of the invention, a channel for receiving a flanged edge of a unit dose blister-pack is defined between a blister abutment structure and a backstop structure. A cutting edge is disposed with respect to the channel so as to engage the flanged edge translated along the channel. The abutment structure is adapted to abut the blister  
15 when the flanged edge is translated along the channel such that the cutting edge does not substantially protrude into the compartment, or cavity, defined by the blister. In accordance with another aspect of this embodiment the cutting edge projects from the backstop. In accordance with yet another aspect of this embodiment, a first height of the abutment structure is offset from a second height of the backstop structure.

20 Another embodiment of the invention teaches a container for receiving an array of encased articles and an apparatus for opening the seal that encases each of said articles. In accordance with another aspect of this embodiment, the apparatus for opening the seal is disposed within an opening of the container. In another aspect of this embodiment, the container has an opening at one end for receiving the array and the apparatus for opening the seal is  
25 disposed at an opening at an opposing end, or an adjacent end, or the same end.

Other advantages and objects of the present invention will be apparent from the following description, the accompanying drawings, and the appended claims.

5

**BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 is an isometric view of the present invention.

Fig. 2 is an exploded view of the cutting apparatus of Fig. 1.

Fig. 3 is an exploded isometric view of the embodiment of Fig. 1.

Fig. 4 is the underside view of Fig. 3.

10

**DETAILED DESCRIPTION OF THE INVENTION**

Throughout the various figures, the same reference numerals are used to denote the same or like features of the invention.

Referring first to Fig. 1, therein is illustrated an apparatus 40 for opening the seal of an encased article, such as the seal which is a unit blister-pack package 28. Also shown in Fig. 1, but which will be discussed in greater detail later, is a container 12 which together with the apparatus 40 form a system 10 in accordance with an embodiment of the invention. Further illustrated in Fig. 1 is an array 20 of unit dose blister-pack 28 packages.

Referring now simultaneously to Figs. 1 and 2, the apparatus 40 has a channel 50 with a cutting member 60 having a cutting edge 62 disposed with respect to the channel 50 such that a flanged edge of a unit dose blister-pack 28 is engaged when the flanged edge is translated along the channel 50. One of the flanged edges of the blister-pack 28 is shown disposed within the channel 50 positioned for movement in the direction shown by the direction arrow 41.

The channel 50 is defined by a blister abutment structure 44 and a back stop 48. In Fig. 1, the blister 22 of the unit dose blister-pack 28 is shown abutting the abutment structure 44. The underside of the unit dose blister-pack 28 is shown in contact with the backstop 48 in Fig. 1. In

5 this illustrated embodiment a first height of the abutment structure 44 is offset from a second height of the backstop, thereby forming a stepped or recessed structure for engaging a blister.

Referring again to Figs. 1 and 2 simultaneously, the cutting member 60 with its cutting edge 62 is shown positioned within and projecting into the channel 50 from the backstop 48.

10 Referring now particularly to Fig. 2, therein can be seen the manner in which the cutting member 60 can be seated within a seating compartment 64 in the backstop and held in place by a securing member 66. It will be understood that the cutting member 60 may be permanently or temporarily integrated into the apparatus 40 by way of any number of methods known by those skilled in the art.

15 Referring now to Figs. 3 and 4 simultaneously, the apparatus 40 is shown separated from the container 12. To form the package 10 of Fig. 1, the apparatus 40 is inserted into the container 12 in the direction illustrated by the arrows 18. In the embodiment illustrated, the apparatus 40 is held in place at the opening 16 of the container by cooperation between detents 42 of the apparatus and slots 14 of the container. As will be understood by those skilled in the art, the apparatus 40 may be attached to the container 12 with mechanical or chemical means including  
20 tabs, couples, tapes, adhesives or formed integrally therewith. Alternatively the apparatus 40 may be removably attached to the container 12.

Referring again to Fig. 1, in operation the end-user separates a unit dose blister pack 28 from the array package 20 by tearing along lines of demarcation 26. A flanged edge of an individual, or unit, dose blister-pack 28 is then inserted in the channel 50 and translated in the  
25 direction of arrow 41 to cut along the unit dose blister pack 28. The abutment of the blister 22 with the abutment member 44 helps position the pack 28 so that the cutting edge 62 of the cutting member 60 engages the pack 28 below the blister 22 compartment or so close to the

5 perimeter of the blister 22 compartment that the cutting edge 62 does not substantially project into the cavity, or compartment, formed by the blister 22. A relief nick 46 is positioned adjacent the cutting edge 62 and the cutting member 60. The relief nick 46 allows the flanged edge of the pack 28 to deform slightly and depart from the path of the channel sufficiently to prevent bunching at the cutting edge and thereby facilitate initiation of and cutting of the pack 28.

10 This specification conveys the best mode for carrying out the invention known to the inventor at the time of filing the patent application. Modifications and alternative embodiments may be made in the foregoing without departing from the scope and spirit of the present invention as defined in the appended claims.